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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/558,715	11/29/2005	Giulio Ferretti	NL 030620	7181

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EXAMINER

SHIKHMAN, MAX

ART UNIT	PAPER NUMBER
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2624

MAIL DATE	DELIVERY MODE
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07/22/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/558,715	Applicant(s) FERRETTI ET AL.	
	Examiner MAX SHIKHMAN	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/29/2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,7 and 8 is/are rejected.
- 7) ☒ Claim(s) 2,4-6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 November 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/29/2005</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1,7; 3,8 rejected under 35 U.S.C. 103(a) as being unpatentable over
Chen "Method and apparatus for smoothing measurements and detecting
boundaries of features" US-PAT-NO: 5038378 in view of

Ramponi, "Warped distance for space-variant linear image interpolation", IEEE
Image Processing. May 1999. Volume: 8, Issue: 5. pp 629-639.

() Regarding Claims 1,7:

(Note, gradient direction is perpendicular to the edge direction. Some interpolate along an edge to preserve the edge. Applicant's invention interpolates points on the gradient and then reserves these interpolated points on the gradient for further interpolation.

local gradient=Chen 202. direction of a local gradient = Chen Fig8. -1/S slope. Col7 line 60)

1. A method of interpolating sample values of samples of an image, the method comprising:

determining a direction (Chen Fig8. -1/S slope) of a local gradient (202) of the sample values for a particular one of the samples from sample values neighboring the particular one of the samples, (Col 7 line 60)

selecting a position of interpolator input values in the direction of the local gradient of the particular one of the samples, (Fig8: g_2 g_1 g_{-1} g_{-2})

interpolating the interpolator input values (Fig8: g_2 g_1 g_{-1} g_{-2}) for the particular one of the samples from sample values neighboring (172.2, 172.1) the interpolator input values, and (g_1 is interpolated from 172.2, 172.1. Col 8 line 1.)

Chen discloses everything as described above except, determining in a single step a warping factor for a warped distance interpolator using the interpolator input values.

Ramponi discloses, determining in a single step a warping factor for a warped distance interpolator (Ramponi P633 formula 4) using the interpolator input values. (x_k)

As Ramponi discloses, P633, *“The distance is changed in order to “move” the pixel itself toward those neighbors which are able to yield a visually better estimate for it.”* So, Ramponi discloses warped distance and Chen discloses interpolating pixels g in gradient direction. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Ramponi’s formula 4 on values of Chen’s Fig8 g . This enables a warped distance interpolator for better visual result.

All the claimed elements were known in the prior art—warped distance and interpolation along a gradient—and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at time of the invention.

() Regarding Claim 3:

(Note: local gradient=Chen 202. direction of a local gradient = Chen Fig8. -1/S slope. Col7 line 60.

output image=Ramponi p639 col1 "output image". input image=p636 col1)

3. A method of interpolating sample values of samples (Pi, Pot) of an image as claimed in claim 1, wherein:

an output image is interpolated from an input image in a system for digitally scaling the input image with input samples to obtain the output image with output samples, (Chen Col6 line 30, interpolate)

the determining the direction of the local gradient is arranged for determining a direction of the local gradient for each one of the input samples from neighboring input sample values to obtain input sample gradient values, and (Chen Fig8. -1/S slope. Col7 line 60.)

the method further comprises mapping of the input sample gradient values to output gradient values of the output samples, wherein the corresponding one of the output gradient values is used as the local gradient of the particular one of the samples. (Chen Fig8. -1/S slope. Col7 line 60.)

() Regarding Claim 8:

8. A display apparatus comprising the warped distance interpolator (3) of claim 7, and a display screen (DS). (Ramponi p629 col1, display.) (Chen Col3, "FIG. 1... display")

Allowable Subject Matter

3. Claims 2,4,5,6 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. The following is a statement of reasons for the indication of allowable subject matter: Claim 2 would be allowable because the prior art does not disclose, the determining (1) the direction of the local gradient (.theta.) is arranged for determining a direction of the local gradient (.theta.) for each one of the output samples (Po) from neighboring temporary output sample values (I'(m,n)), along with other limitations in the claim.

Claims 4-6 depend on Claim 2 and would thus be allowable.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MAX SHIKHMAN whose telephone number is (571)270-1669. The examiner can normally be reached on Monday-Friday 8:30AM-6:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JINGGE WU can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jingge Wu/
Supervisory Patent Examiner, Art Unit 2624

/Max Shikhman/
Examiner, Art Unit 2624
7.15.2008